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(NASA-CR-193580) THE B SUPERGIANTS IN THE LARGE MAGELLANIC CLOUD Final Report (Princeton Univ.) 2 p

FINAL REPORT

B Supergiants in the Large Magellanic Cloud
NASA IUE Grant NAG5-1014

Submitted to
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, MD

Prepared by: E. L. Fitzpatrick
Principal Investigator

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IUE Final Report
Submitted by E. L. Fitzpatrick -- 1/92
Project Award Number: NAG5-1014
Project Name: "B Supergiants in the LMC"

The research supported by this grant was a 2-year IUE Observing Program designed to substantially increase the size of the IUE database for luminous blue Large Magellanic Cloud stars. With this enlarged database we intend to study the physical properties of the stars, paying particular attention to possible indicators of their evolutionary status (i.e., pre- or post- red supergiants), and to use to the data to investigate general LMC properties such as the wavelength dependence of the ultraviolet interstellar extinction. The program designations are OBLCG and OBMCG. Catherine Garmany (University of Colorado) is the P.I. and George Sonneborn (Goddard S.F.C.) is the other co-Investigator.

Twelve IUE observing shifts were allocated to the project in each of the IUE's 12th and 13th observing seasons. The final observing shift for the second year of the program was completed in October 1990. All the data, from Years 12 and 13, were processed at the University of Colorado's IUE RDAF.

One major goal for the data is to produce a low-dispersion UV spectral atlas for the 200 or so LMC blue supergiants which have been observed by IUE. This involves supplementing the new data (spectra for approximately 100 stars) with IUE Archival data for a similar number of stars. This aspect of the project is currently on hold, since a major reprocessing effort is underway by the IUE Project which will greatly improve the quality of low-dispersion IUE spectra. This reprocessing is expected to be finished for the low-dispersion data during 1992. The use of the latest processing system will greatly increase the usefulness of the Atlas.

In the meantime, the data are being examined for their applicability to interstellar extinction and stellar continuum studies. Two of the newly observed stars have been found to show UV extinction properties similar to those found in the Milky Way. These stars are located near another LMC star previously known to exhibit Galactic-like reddening. This suggests a sizable region in the LMC with interstellar dust grain properties similar to those seen in the Galaxy. New stellar continuum models for examining supergiant spectra are being computed at Princeton using the ATLAS9 program developed by R. Kurucz (Smithsonian Astrophysical Observatory). The new models include much more complete opacity tables and should produce a better representation of supergiant continua than available in the past. The large collection of spectra obtained for the LMC supergiants makes them ideal for studying the systematic stellar continuum properties.